



# Grottoes 2020 Transportation Plan

Developed by the  
Transportation Planning Division

of the

Virginia Department of Transportation

in cooperation with the

U.S. Department of Transportation, Federal Highway Administration

and the

Town of Grottoes

August 2002

# Grottoes 2020 Transportation Plan

## INTRODUCTION

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The *Grottoes 2020 Transportation Plan* (the Plan) was developed as a cooperative effort between the Federal Highway Administration, Virginia Department of Transportation (VDOT), and the Town of Grottoes. The Plan is the product of a study that evaluated the transportation system in Grottoes and recommended a set of transportation improvements to best satisfy existing and future transportation needs. The study identified needs based on the engineering analysis, capacity, and safety of the transportation system.

Effective transportation systems are essential to continued economic growth and development in the Grottoes region as well as the Commonwealth of Virginia as a whole. Providing safe, effective and efficient movement of people and goods is a basic goal of all transportation programs in Virginia. It is with this basic goal in mind, and with further consideration of environmental issues and local government transportation objectives, that this transportation plan was developed.

VDOT will use this Plan when evaluating requests from the Grottoes local government for specific transportation projects, and when implementing projects on the VDOT-maintained roadway system. The recommendations in this *Grottoes 2020 Transportation Plan* will also be used as part of the VDOT statewide transportation planning process to ensure that local transportation projects are compatible with and support transportation improvements both statewide and in neighboring localities.

## STUDY AREA AND THOROUGHFARE SYSTEM

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Grottoes is a small town in the Shenandoah Valley, positioned between the Blue Ridge range to the east and the Massanutten range to the northwest. Historically, the town has served as a commercial hub for the surrounding agricultural community. Recently, however, manufacturing in the Shenandoah Valley has served as the base of the town's economy. Few jobs exist in Grottoes itself, and most of its residents commute to nearby areas. Local officials describe vehicular traffic as light in most of the town.

A subset of the town's roadway network is designated as the urban thoroughfare system. The thoroughfare system includes roads that are functionally classified as collectors or arterials. Arterial roads serve as the major traffic-carrying facilities in the area. Collector roads carry a lesser volume of traffic and feed traffic to the arterial roadways. The focus of the *Grottoes 2020 Transportation Plan* is the thoroughfare system. In addition to roadways, improvements to the following other modes of transportation have been evaluated as part of this study: parking; bicycle and pedestrian facilities; intercity rail, bus, and air travel; transit and paratransit; taxi; and the movement of goods.

## DEMOGRAPHIC OVERVIEW

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The recent 2000 U.S. Census reports the Town of Grottoes to have a population of 2,114. According to the 1990 census, the population of the town was 1,455. The Census 2000 count represents a 45% increase from the 1990 count. From a planning standpoint, it is assumed that population will continue to grow at a rate comparable to the current rate of growth. Using this trendline type of analysis, the population is expected to continue growing at a fast rate into the foreseeable future.

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Industrial activity the Grottoes area includes manufacturing and service operations. The major industrial companies located in the area include the following: Coors Brewing Company, Merck (pharmaceuticals), Shrekhise Nurseries, and Alcoa (metal products). Employment in the Grottoes area is expected to grow moderately over the 20-year horizon of the study.

## SUMMARY OF APPROACH AND ANALYSIS METHODS

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This transportation plan was developed using a process that included:

- Data Collection
- Forecasting of Future Traffic Demands
- Development of Recommendations to Address Existing and Future Transportation Needs
- Coordination with Grottoes Government Officials and the Public
- Environmental Overview and Transportation Plan Documentation

Recommendations for the *Grottoes 2020 Transportation Plan* are based on a comprehensive review of the capacity, safety, and geometry of the existing roadway system, as well as other issues that affect the area's transportation system (such as parking, other modes of transportation, and goods movement).

The recommendations were divided into three phases. Phase One recommendations correct existing deficiencies and meet the most immediate transportation needs of the area. Phase Two recommendations apply to an interim year of 2010, and Phase Three recommendations are long-term projects (year 2020). Projects in all three phases are intended to accommodate travel demands to the horizon year of 2020.

## PHASE ONE: BASE YEAR (2000) RECOMMENDATIONS

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### Augusta Avenue between SCL and NCL

Construct sidewalk along the west side of Route 340 to provide sidewalk continuity.

### Intersection of Dogwood Avenue and Caverns Boulevard

Install four-way stop control to provide safer and easier turning movements for trucks.

## PHASE TWO: INTERIM YEAR (2010) RECOMMENDATIONS

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### Intersection of Third Street and Dogwood Avenue

Construct turn lanes for Dogwood Avenue approaches to the intersection to correct a southbound operational deficiency. A turn lane addition would also help correct reported northbound truck turning movement difficulties.

## PHASE THREE: FUTURE YEAR (2020) RECOMMENDATIONS

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### Extend Third Street from Augusta Avenue to Route 663

Extend roadway to provide better access to points east of Grottoes.

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## OTHER MODES

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In developing the *Grottoes 2020 Transportation Plan*, all modes of travel were considered. Either within the town itself or within an area of reasonable accessibility, Grottoes residents can make use of transportation by transit, taxi, air, rail, bus, bicycling and walking.

In the town itself, no fixed-route transit service is provided, but paratransit service is available for senior citizens and disabled citizens through a program operated by the non-profit Community Association for Rural Transportation (CART). Using private taxi companies, this paratransit service provides transportation for such purposes as medical appointments and grocery shopping. This service should be continued.

The town is not served by intercity bus or rail service. Given the small size of the town, is unlikely that Grottoes could sustain such services. Given this fact, and the fact that bus and rail service are available in nearby Staunton, this Plan make no recommendations regarding rail or intercity bus service in Grottoes.

Unlike many small towns, Grottoes has commercial passenger air service available nearby. United and U.S. Air Express both fly out of the Shenandoah Valley Regional Airport, which is located about five miles west of Grottoes. This Plan recommends that local officials work to ensure that commercial passenger air service continue to be available out of the airport.

Most goods movement in and through Grottoes is accomplished by truck. While truck flow through the town is generally adequate, several of the proposed roadway recommendations will assist truck access to shippers by reducing congestion and making turning movements easier. Two companies in the Grottoes area, Coors and Merck, reported using a freight rail line owned by Norfolk Southern that runs through the Town. This line runs approximately parallel to Route 340. Given the importance of these companies to region, this Plan recommends that local officials work to ensure the continued availability of freight rail service in the Grottoes area.

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## LOCAL PROJECTS

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Local planning goals and efforts often result in the identification of projects that are either not located on the designated thoroughfare system, or reflect improvements that are intended to support future development or affect the way that a locality is intending to grow. The improvements that result from or support these local planning initiatives are included in the transportation plan as local projects. Four local projects are included in the *Grottoes 2020 Transportation Plan*.

### Forest Avenue between Sixth Street and 20th Street

Construct sidewalk along Forest Avenue to provide sidewalk continuity.

### Sixth Street between Forest Avenue and Dogwood Avenue

Construct sidewalk along roadways to provide sidewalk continuity.

### 20th Street between Dogwood Avenue and the Town Park

Extend existing bicycle trail west along 20th Street to provide a connection with the Town Park. Currently, the trails exist between Caverns Boulevard and 20th Street.

### Extend 19th Street to Route 340 at Randall Road

This extension will improve access for emergency vehicles trying to get to Route 340 from 19th Street.

## ENVIRONMENTAL OVERVIEW

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An environmental overview was conducted for the projects in the *Grottoes 2020 Transportation Plan*. There were no environmental features identified in Grottoes that would preclude the implementation of any of the included recommendations.

## LOCAL COORDINATION AND CITIZEN PARTICIPATION

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The development of the *Grottoes 2020 Transportation Plan* included coordination meetings with local Town officials and a public meeting with citizens, Town officials, and VDOT representatives.

The three coordination meetings held for this study were as follows: 1) a kick-off meeting, (2) an existing conditions meeting, and (3) a draft recommendations meeting. The kick-off meeting, held in January 2000, enabled the project team to discuss the purpose and scope of the study, the schedule for data collection and plan preparation, and the coordination process. At the second meeting, held in July 2001, the study team presented the results of the base year and horizon year traffic analysis and discussed potential projects to meet projected transportation needs. During a third meeting, held in October 2001, a draft set of transportation improvements was discussed among the study team, Town officials, and VDOT representatives.

A public meeting was held on January 14, 2002 to present the draft transportation plan to Town officials, citizens and other interested parties. Meeting participants were invited to provide comments that were considered in the development of the *Grottoes 2020 Transportation Plan*.

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## PLAN ADOPTION

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The Grottoes Town Council voted to adopt the *Grottoes 2020 Transportation Plan* on February 11, 2002.

## ADDITIONAL INFORMATION

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Detailed information on the development of the *Grottoes 2020 Transportation Plan* and the study recommendations is included in the *Grottoes 2020 Transportation Plan Technical Report*. This document is available for review at the Grottoes Town Hall and the local library. The technical report also is available in Richmond at the central office of VDOT's Transportation Planning Division, the VDOT district office in Staunton, and the VDOT residency office in Harrisonburg.

Projects included in the Virginia Transportation Six-Year Program (FY 2002-2008) are not part of the Grottoes 2020 Transportation Plan. The Six-Year Program can be reviewed online at <http://www.viriniadot.org>.

Information on Six-Year Program projects for the Town of Grottoes can also be found by contacting the VDOT Resident Engineer at the Harrisonburg Residency Office (540-434-2586).



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Route	Facility Name	From	To	Road Segment Length	Recommendation	Estimated Cost [1]	Existing Typical Section	Recommended Typical Section	Average Daily Traffic		
									Year 2000	Year 2010	Year 2020
VA 256 at VA 904	3rd Street at Dogwood Avenue	N/A	N/A	N/A	Construct left turn lanes for Dogwood Avenue approaches	\$180,000 [2]	N/A	N/A	N/A	N/A	N/A
VA 340	Augusta Avenue	SCL	NCL	1.00	Construct sidewalks on west side of Route 340	\$64,000 [3]	R2	U2	5,633	7,182	8,590
	6th Street	Forest Avenue	Dogwood Avenue	0.14	Construct bike path/sidewalk	\$9,000 [3] [6]	R2	U2	N/A	N/A	N/A
	Forest Avenue	6th Street	20th Street	0.80	Construct bike path/sidewalk	\$51,000 [3] [6]	R2	U2	N/A	N/A	N/A
	19th Street	Existing 19th Street	Route 340	0.23	Extend 19th Street to Route 340 at Randall Road	\$1,058,000 [4] [6]	N/A	U2	N/A	N/A	N/A
VA 825	20th Street	Dogwood Avenue	Town Park	0.5	Construct bicycle/walking trail on 20th Street to link Town Park with existing trail on Dogwood Avenue	\$51,000 [5] [6]	N/A	N/A	N/A	N/A	N/A
VA 904 at Caverns Boulevard	Dogwood Avenue at Caverns Boulevard			N/A	Install 4-way stop control	\$6,000 [7]	N/A	N/A	N/A	N/A	N/A
VA 256	3rd Street	Augusta Avenue	Route 663	0.16	Extend 3rd Street from Route 340 to existing Route 663	\$538,000 [8]	R2	U2	1,411	1,799	2,151
ESTIMATED TOTAL THOROUGHFARE SYSTEM COST						\$788,000					

[1] The cost estimates included in this table are planning level costs in year 2000 dollars. These cost estimates are based on statewide unit cost averages and should be used for planning purposes only. Actual construction and right-of-way costs may vary based on local conditions.

[2] Assumes \$90,000 per turn lane (200' turn lane and 200' taper).

[3] Assumes \$64,000 per mile for sidewalk construction.

[4] The unit cost for an urban 2-lane roadway is assumed to be \$2.1 million per mile, with an additional 50 percent for right-of-way and utilities. Bridge over railroad assumed to be 110' long, 36' wide (2 lanes), and \$84 per square foot.

[5] Assumes a unit cost for the construction of new 8' bicycle trail is \$101,000 per mile.

[6] Local project not included in total cost for thoroughfare system.

[7] Assumes \$3,000 per-sign cost for signage and installation

[8] Assumes \$2,100,000 per mile for new U2 roadway, with 60 percent of total cost added for right of way acquisition

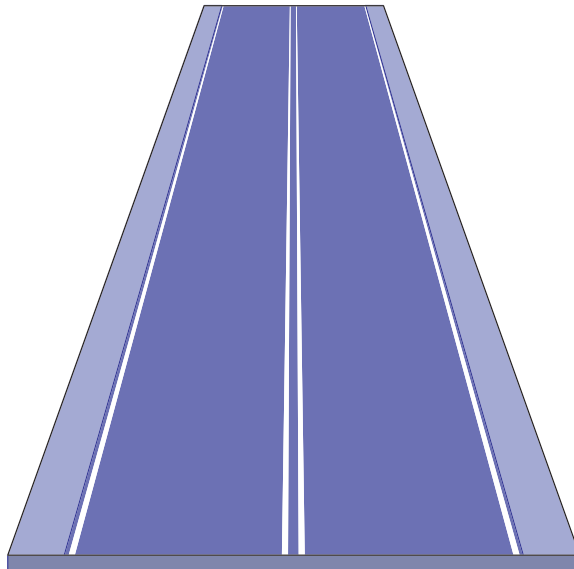
N/A - Not applicable

## TYPICAL SECTIONS

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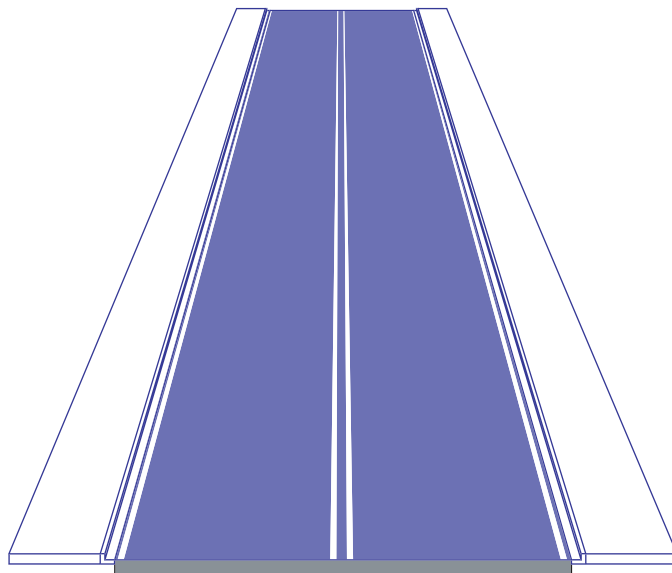
### *R2*

Rural two-lane roadway with standard shoulders and ditches.



### *U2*

Urban two-lane roadway with curb and gutter.



Unless right-of-way considerations preclude their inclusion, sidewalks are recommended on both sides of these urban roadways.